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Real-time spectrum occupancy measurements based on the energy detection method in cognitive radios

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Abstract:

Spectrum occupancy measurements have become vital due to the proliferation of radio users. Literature shows that most of the allocated spectrum is used sporadically. This brings in the idea of dynamic spectrum access techniques using Cognitive Radios (CR). Little research attention has focussed on the real-time measurements of spectrum occupancy. Hence, the proposed research investigates the spectrum occupancy to determine how often frequency channels for TV bands are utilised. This was achieved by installing a low-cost spectrum sensor using Yagi Antennas to monitor the TV spectrum bands, applying statistical analysis tool for data processing. The study used Energy detection techniques to determine the spectrum occupation status, i.e., whether the spectrum is vacant or occupied. This study further explores the detailed pragmatic measurements study of spectrum occupancy with data from TV frequency band (470 – 702MHz).